ENGINEERING NEWS-RECORD

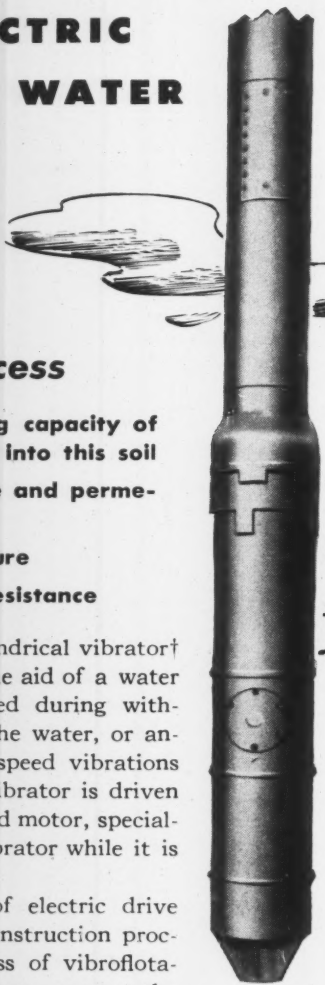
A McGRAW-HILL PUBLICATION

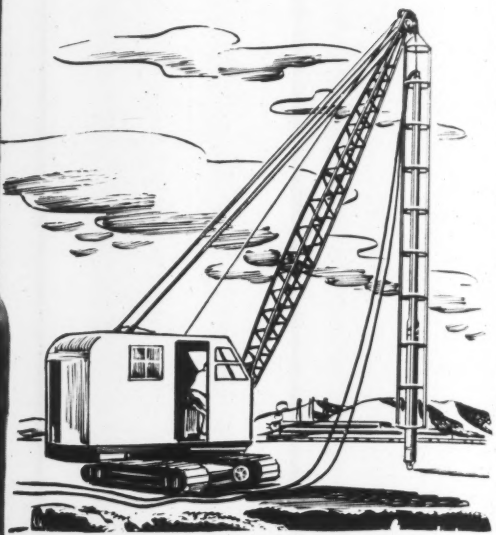
One of twin 257-ft. span reinforced concrete hangars ri[illegible] Chicago's airport

VIBROFLOTATION

MODERN METHOD OF SANDY SOIL COMPACTION

EMPLOYS ELECTRIC VIBRATOR AND WATER





Motor-driven eccentric vibrator (left) is suspended on the crane boom (above) before it enters the soil which is to be compacted.

This New Process*

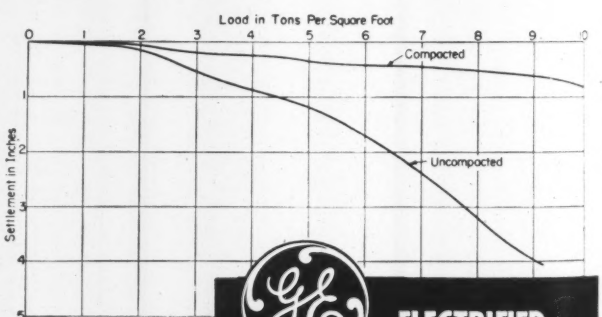
- **Increases the load-bearing capacity of soils, and of piles driven into this soil**
- **Diminishes the void volume and permeability of soils**
- **Diminishes active soil pressure**
- **Increases the passive soil resistance**

Vibroflotation uses a vertical, cylindrical vibrator† which "sinks" into the earth with the aid of a water jet; compaction being accomplished during withdrawal by the combined action of the water, or another suitable liquid, and the high-speed vibrations which tamp the soil particles. The vibrator is driven by a General Electric totally enclosed motor, specially designed to operate within the vibrator while it is submerged in wet sand.

The same inherent advantages of electric drive which have made possible many construction processes also contributed to the success of vibroflotation. Electricity controls the process, pumps the water, and drives the vibrator by flexible cable throughout the length of its vertical travel.

If you are contemplating electrification of your construction equipment, consult your General Electric representative for first-hand information on recent electrical developments which will help you build a more economical, safer construction tool. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

Curves (below) show how vibroflotation increases load-bearing capacity of soils, and reduces settlement.



* Vibroflotation was introduced in this country recently by Parsons, Brinckerhoff, Hogan and Macdonald, consulting engineers; and Merritt-Chapman and Scott, general contractors.

† Built by Baldwin Locomotive Works.

GENERAL ELECTRIC

655-58

ELECTRIFIED CONSTRUCTION

BETTER PRODUCT ★ LOWER COST

News of the Week

ENGINEERING NEWS-RECORD • APRIL 24, 1947 • VOLUME 138 • NUMBER 17

Interior Department funds cut in half by House

Floor fight over 47 percent cut in construction funds seen certain as measure comes up for debate—Score heavy building contracts at present time

A lengthy House debate appears certain over the Interior Department Appropriations Bill, for fiscal 1948, with western congressmen of both parties fighting the Appropriations Committee's 47 percent slash in the department's budget.

The attack apparently centers about the drastic reductions in construction funds—particularly those for the Bureau of Reclamation. Budget Bureau recommendations called for a total of $145,952,200 of new funds for the reclamation program, but the committee trimmed this to $62,717,600 of which $55,258,600 is for construction. Other construction agencies of the department sustained heavy cuts, estimates being reduced from $20,278,000 to $6,907,800 for the Bonneville Power Administration; from $18,104,900 to $9,113,230 for the Geological Survey (including $3,000,000 instead of $8,000,000 for topographical surveys and mapping, and $2,578,680 for gaging streams instead of $3,750,000); from $14,555,550 to $10,304,655 for the National Parks Service, and from $3,925,000 to $1,371,000 for the Southwestern Power Administration.

Criticize interior work

The committee report on the measure was particularly critical of interior construction work at this time. "It is not wise management for the government to plan and go forward with millions of dollars in construction at a time when private business is anxiously seeking in the market place the same commodities for which government will be the priority buyer, if construction projects requested by the department . . . are allowed in full," it said.

Commenting upon the President's order freezing public works construction last August, the committee said that the Bureau of Reclamation at that time had enough unexpended funds available to provide construction for "nearly 2½ years" at the curtailed rate contemplated by the President's order. "It is manifest that material shortages have not been alleviated and that the government has been a formidable competitor with private enterprise, even under the decreased speed of construction caused by the President freezing the expenditure of funds," the report added.

Because of the effects of the "freeze order" the bureau will have available an estimated total of $85,826,767 in unexpended construction funds and $51,874,796 of unobligated construction funds as of June 30, 1947—the end of the present fiscal year—the committee pointed out. These amounts, plus the $55,258,600 in new funds approved by the committee, would give the bureau $141,085,367 in unexpended funds and $107,133,396 in unobligated monies available for construction during the next fiscal year. Including last year's congressional appropriation of $109,497,108, the bureau started the current fiscal year with nearly $219,000,000 available for construction. Thus, both its expenditures and contractual obligations during the coming year must be pared below last year's activities.

An important policy change in the bill as approved by the committee was the elimination of appropriations for construction projects from general funds of the Treasury, substituting appropriations from the reclamation fund for all such work. Major items approved for construction included $9,611,600 for the Missouri River Basin, as against $23,000,000 recommended by the budget bureau; $9,435,000 for the Columbia Basin Project, as against the budget estimate of $27,500,000; $6,900,000 for the Central Valley Project in California, cut from $20,000,000; $6,200,000 for Davis Dam project in Arizona and Nevada, slashed from $18,000,000; and $4,815,000 for the Colorado-Big Thompson Project, reduced from $14,000,000.

The committee also slashed the budget estimate of $5,000,000 for general investigations to $125,000.

***Fire Follows Explosion**—View shows the appearance of Texas City, Tex., shortly after the disastrous explosions of April 16. At left is the plant of the Monsanto Chemical Corp. More than 400 persons were killed and some $100,000,000 of property damage resulted from the explosion of a ship containing ammonium nitrate. The blast caused explosions in nearby chemical and oil plants. Despite the tremendous damage to property above ground, comparatively little disruption was suffered by utility services.*

NEWS IN BRIEF

In telegraphic form, here are latest news developments on the engineering and construction front during the week.

Construction—In 1946 *St. Louis, Mo.*, spent $3,599,000 for airport purposes. . . . Standard Oil Co. of Ohio has announced a $10,000,000 expansion and modernization plan for its *Lima, Ohio*, refinery. . . . Work will start soon on a $4,600,000 project for expansion and improvement of the National Biscuit Co.'s plant at *Niagara Falls, N. Y.* . . . The *New Albany, Ind.*, flood control district commission has approved a plan for a $6,000,000 floodwall to protect that area from Ohio River floods. . . . Plans have been ordered for a $2,750,000 building at *Seattle, Wash.*, for the Federal Reserve Bank of San Francisco. . . . Plans are going ahead for a $7,000,000 mill at *New Iberia, La.*, to make wallboard from bagasse, a sugar cane residue. . . . Governor Ben Laney has signed bills providing $80,927,479 for a 2-year construction program in *Arkansas.* . . . Two new office buildings and other improvements totaling $3,000,000 are planned at *Atlanta, Ga.* . . . Westinghouse Electric Corp. will build an $825,000 manufacturing plant at *Philadelphia, Pa.*, while the Philadelphia Electric Co. has plans for a 5-year $200,000,000 expansion program, including a $54,000,000 generating station at *Southwark* and $20,000,000 of additions and equipment near *Norristown, Pa.*

Highway—*Charlotte, N. C.*, has approved construction of a superhighway through the city. $1,400,000 is available for the work. . . . A $900,000 bond issue for road building in *Crawford County, Wis.*, has been approved by voters. . . . *Ohio* State Highway Department is planning a safety campaign for its 7,400 workers. . . . The Pinto Creek Gorge Bridge, 710 ft. long, with a main span of 371 ft. and 160 ft. above the bottom of the canyon, will be a feature of the realignment of Highway 70 between *Superior* and *Miami, Ariz.*

Housing — Security Development Corp., *Rochester, N. Y.*, plans to build two apartment houses on East Avenue to cost about $550,000 each. . . . Johnson Development Co. has started work on 100 duplex houses at *Elsmere, Del.*, to cost $1,000,000. . . . Plans are under way for F. R. McAbee to build a $2,250,000 garden apartment at *Seattle, Wash.* . . . C. S. Guiliano, *Darby, Pa.*, announces two developments in *Delaware County* to cost over $1,000,000. . . . On Lake Burien Heights, *Seattle, Wash.*, ground has been broken for the start of a $5,000,000 development to provide 544 rental apartments.

Indict California firm for CPA violations

The Federal Grand Jury on April 9 indicted Tanforan Co., Ltd., and its contractor for restoring its race track at San Bruno, Calif., in violation of CPA regulations.

Indicted were Guy M Standifer, president; W. J. Levin, secretary-treasurer; Earl W. Heple, general contractor and A. W. Barnewitz, project superintendent. Bail was fixed at $5,000 each.

The indictment listed 13 counts, conspiracy to violate CPA restrictions and 12 instances of using labor and new materials totaling $199,089 that should have gone for veterans' housing. The materials were used to prepare the track for its current season, the first after five war years in which the Navy occupied the site.

The maximum penalty for each individual if convicted on all counts would be 14 years and a $130,000 fine.

Harold C. Faulkner, counsel for Tanforan, labeled the CPA's position "un-American," claiming that the company had released the Navy from the obligation of putting the track back into shape, saving the government some $600,000, with the understanding that it would immediately undertake its own reconstruction work.

Lowell Turrintine, Stanford University law professor who was named by CPA to make an impartial investigation, had reported that the government had "induced" Tanforan to accept a cash settlement and had "permitted the company to commit itself by resuming possession of the premises and doing a large amount of work" on reconversion. However, he also found that the company had violated regulations.

THE COVER PICTURE

Twin hangars of unusual reinforced-concrete design with thin-shell arched roofs of 257-ft. clear span on buttresses 18 ft. high are nearing completion for the American Airlines at the Chicago municipal airport. Each hangar with depth of 175 ft. and door openings 235 ft. wide by 40 ft. high, can accommodate simutaneously three four-motor and two twin-motor airplanes. Roof of each hangar is concreted in three single-day operations, using a traveling form. Sections are nearly 60 ft. long between expansion joints. Normal elapsed time between construction of successive sections is two weeks.

The side wall and reinforcing bars for the arch of the second hangar are seen in the foreground of the picture.

The contractor is the Corbetta Construction Co. and the engineers are Ammon and Whitney.

Karl P. Billner awarded the Frank P. Brown medal

Karl P. Billner, president of the Vacuum Concrete Corp. of Philadelphia, Pa., will be awarded the Frank P. Brown medal of the Franklin Institute "in consideration of his invention of a practical process for treating concrete, together with the development of suitable equipment whereby the qualities of the concrete are improved and the elapsed time of construction is reduced."

Mr. Billner was born in Sweden, March 5, 1887 and he received his degree in civil engineering from Chalmers Technical University, Gothenburg, in 1906, the same year that he came to the United States. From 1907 to 1912 he worked as an irrigation engineer, as a locating engineer for a railroad, and later as a resident engineer for the Washington State Highway Department. In 1913 he became bridge engineer for the Columbia River Highway Department in Oregon, where he designed and supervised the construction of the first concrete bridges in that state. Returning to Stockholm in 1916, he worked in engineering and building construction. In 1925 he formed the Aerocrete Britain Ltd. in London, and later the Aerocrete Corporation of Canada and America.

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House approves strict labor controls; Senate begins debate on milder bill

Construction labor unrest grows as Congress debates restrictions on unions' power—High costs bring cuts in building plans

A bill containing what observers said are the sharpest restrictions on unionized labor ever attempted in the United States passed the House of Representatives by a nearly three-to-one vote last week, as the Senate began consideration of a parallel but some what milder measure.

While the national Congress acted on these measures, reports of strikes and impending work stoppages in the construction industry appeared to be on the increase, and warnings of the effect of unrest and spiraling building costs appeared as several states and industrial concerns announced curtailments of construction programs.

The measure passed by the House (H. R. 3020) would: curb industry-wide bargaining, ban jurisdictional strikes and secondary boycotts, forbid the closed shop, outlaw the checkoff of union dues, permit delaying strikes by injunction, list "unfair" union practices and make unions subject to suit for non-performance of contracts. The Senate bill (S. 1126) differs from the house-approved one in that it does not curb industry-wide bargaining, jurisdictional strikes or secondary boycotts, and it would eliminate the National Labor Relations Board completely.

The House bill gives employees the option of joining a bargaining unit, but does not define "professional" employees. The Senate measure contains definitions of this class of worker (*ENR* April 17, vol. p. 560).

The effect of any federal legislation on the largely intra-state construction industry is debatable, observers said. It is expected, however, that most states will follow the lead of Arizona, South Dakota, Nebraska, Florida, Arkansas, Virginia, Georgia, North Carolina, Tennessee, North Dakota, New Mexico and Texas (which approved its law last week) in passing "right to work" or "anti-closed-shop" legislation.

Comment on the two bills stressed the likelihood of a Presidential veto of the "tough" House bill as the reason for the less sharp curbs of the Senate measure.

Many strikes reported

The strike reports were country-wide, and almost all hinged on demands for greater pay. The North Dakota Contractors' Association was served with a 30-day strike notice by the Minot, Fargo and Bismarck locals of the International Hod Carriers, Building and Common Laborers Union (AFL) after union demands for a flat $1 per hour minimum for common labor had been countered by a contractors' offer of 85 cents. Work on Garrison Dam may be affected if the strike is called.

In Boston, Mass., AFL hodcarriers, laborers and ironworkers were on strike for raises of between 12½ and 23 cents; and painters, structural steel workers carpenters, bricklayers, masons and laborers were either on strike or threatening to strike in the Bridgeport, Conn., area. Carpenters in the Connecticut city, for example, are asking increases from their present rate of $1.75 per hour to $2 per hour, based on a 7-hour day.

An estimated $10,000,000 in construction work on large industrial plants was shut down in the area around Lake Charles, La., when painters continued a week long strike, and in Ohio, construction workers in Summit and Medina counties, and in Columbus and Cincinnati were on strike for more pay.

Other stoppages of construction work reported included: Birmingham, Ala., where construction crafts affiliated with the Birmingham Building and Construction Trades Council began to fail to report for work; Akron, Ohio, where a 5-weeks-old plumbers' strike was blamed for halting work on some 200 new homes, and New York City, where workers on the Brooklyn-Battery tunnel were again on strike.

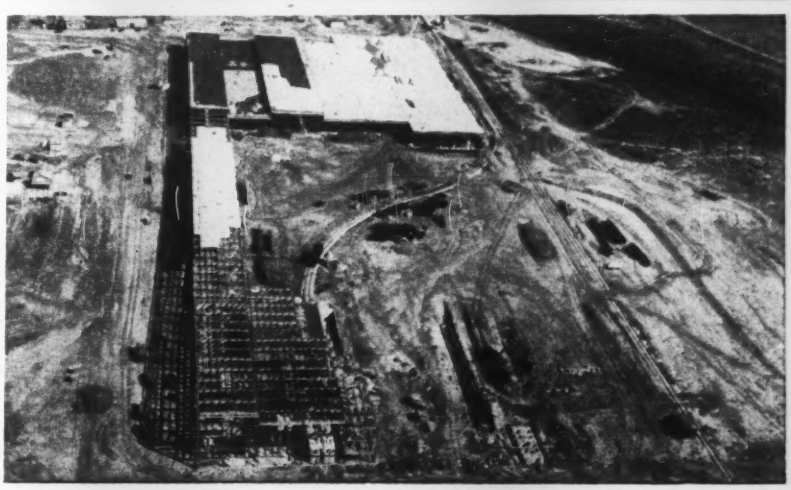
Warnings on costs

The continued rise in construction costs brought a series of warning signs during the week in the form of announcements of slowing down of work.

Michigan, already faced with a deficit of $22,000,000 on its highway program, due to rising costs of construction and diversion of some funds from the state sales tax into local channels, announced it would resist demands for higher wages in the building industry. It is believed that the 40-hour work week now in effect will have to be increased to 48 hours to attract labor.

In Virginia, Governor Tuck coupled an announcement that he would enforce the state's anti-closed-shop law for all state building work with the statement that some $38,000,000 worth of capital outlay construction—including hospitals, and school structures—had virtually been abandoned in view of high costs and inferior workmanship.

The Dow Chemical Co. at Freeport, Tex., issued orders to slow down its $100,000,000 Texas Gulf coast expansion program, blaming the order on high costs of construction.



***Wall Board Mill**—Now under construction south of Macon, Ga., is this $5,000,000 wall board mill for the Armstrong Cork Co. Of steel and masonry construction with outside facing of clay tile, the plant is divided into three sections—a warehouse 400 by 500 ft. (at rear); dryer building 520 ft. by 48 ft., and a wet process building (lower left) 270 ft. by 146 ft. Rust Engineering Co., Pittsburgh, are architects; Beers Const. Co., Atlanta, Ga., are engineers and contractors, and Bethlehem Steel Co. is erecting the steel.*

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

Ceylon begins $210 million irrigation program—Australia pushes development of deep-sea harbors — Investigate power plant potential of East Africa—Rush subway construction in Rome

Ceylon—Spurred by a continuing shortage of foodstuffs, the government of Ceylon has launched a 20-year irrigation program which ultimately will bring 372,000 acres of land into farm production, at a cost of more than $150,000,000 for construction and about $60,000,000 for land development.

Although about 80 percent of the island's population of 6,000,000 is engaged in agriculture, the 24,000 sq.mi. island is forced to import more than 70 percent of its food requirements because of poorly-watered soil.

At present, projects totalling more than $12,000,000 have been started, employing some 25,000 laborers. This labor force is expected to grow to about 40,000 men when the program reaches its full development. Despite this large force, the program involves what is, for the East, a large degree of mechanization. At present there are more than 200 units of heavy construction machinery in use, and a total of about 350 units will be required.

In "dry zone"

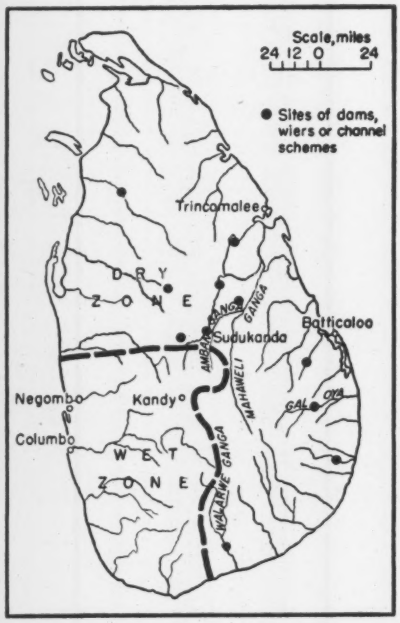
Generally speaking, the irrigation program is centered in the island's "dry zone," in the northern and eastern sectors. One typical project is now under way on the Amban Ganga (River), which drains a very fertile tract in the north-central section. The river has estimated annual yield of 700,000 ac. ft., which will be utilized by a series of four dams. The first will be at Nalanda Oya, where a reservoir will be formed to store about 13,000 ac.ft. and divert about 53,000 ac.ft. annually into an adjoining watershed where another reservoir will be built. The Nalanda Oya Dam will be a concrete gravity structure, 105 ft. from river bed to crest and 400 ft. long at crest. Other projects planned are the Sudukanda Reservoir which will have a capacity of 80,000 ac.ft. behind a concrete dam 80 ft. high and 1,600 ft. long, and the Gal Oya reservoir on the east coast—the largest structure planned in the development. Gal Oya Dam will be an earthen structure, 130 ft. high and 3,500 ft. long, with a storage capacity of 550,000 ac.ft. of which about half will be flood control storage. Another earth dam will be built on the Walarwe River.

Engineers supervising the work include S. C. Taylor, Director of the Department of Irrigation; R. Kahawita and W. A. Guthrie. W. A. R. Robertson, chief construction engineer, is in charge of field work.

Russia—Construction of the first section of the 272-mile Kara-Kum Canal, in Turkemenia (Central Asia) is to begin this year. The canal will utilize the waters of the Amu-Darya River for irrigation of potential farmlands.

Australia—Victoria, fast-developing Australian state, is pushing its frontiers into "no man's land" with a series of dams and irrigation projects now in progress.

Construction authority is the Victorian State Rivers and Water Supply Commission, which is pushing work on the Rocklands Dam which will store some 264,000 ac.ft. of water from the Glenelg River, and the Cairn Curran Dam on the Loddon River, which will store some 120,000 ac.ft. The two dams and their appurtenant works will cost more than $7,000,000.



Irrigation Work—The island country of Ceylon in the Indian Ocean has launched a vast irrigation program that will see the expenditure of about $210,000,000 in the next 20 years, to convert its "dry zone" into farmland.

Ports and Harbors . . . .

Australia—To match the fast growing industrial importance of the island state of Tasmania, plans have been prepared to make its capital—Hobart—one of the finest deep-sea ports in the Commonwealth.

Hobart is situated on the banks of the Derwent River, a distance of nine miles from the sea. The river has natural depths ranging from nine to 25 fathoms and is navigable to ocean-going vessels for seventeen miles upstream.

Overall plans for future development of the port, according to A. L. Steed, engineer-in-charge for the Hobart Marine Board, provides for replacement of the existing King's and Queen's piers by one double pier 340 ft. wide with two berths 700 ft. in length; removal of Ocean Pier and enlargement of wharves and other facilities to provide accommodations for liners of up to 30,000 gross tons, with water depths of 41 to 61 ft. at low water.

Netherlands—The cost of reconstruction of Antwerp Harbor will be about $12,770,000, it was estimated in the budget of the Dutch Public Works Department, made public recently.

Mexico—Vera Cruz, one of Mexico's leading ports, is to be further improved with the construction of 10 wharves over a 4-year period, at a total cost of about $9,750,000. The Mexican Ministry of Marine will supervise the work.

Power . . . .

East Africa—Investigation of the possibility of providing hydro-electric power on "a very large scale" for use in Uganda Territory and elsewhere in East Africa is now proceeding under auspices of the British Foreign Office.

Center of the investigation is in the construction of a dam at Ripon Falls, near Jinja, at the northern side of Lake Victoria, to raise the lake level by about three feet, over a 20-year period. The lake is roughly 20,500 sq.mi. in area.

El Salvador—The Harza Engineering Co. of Chicago, Ill., has been awarded a contract by the government of El Salvador to make preliminary reports on the technical and economic feasibility of two proposed hydro-electric developments on the Lempa River.

At present, there are no such developments on the river, which is one of the largest streams flowing into the Pacific in Central America. The development is expected to aid industrial development of the country, which now must import all its fuel.

Brazil—The Brazilian Ministry of Finance announced conclusion of successful negotiations with the U. S. Export-Import Bank for a loan to aid the Cia. Vale do Rio Doce in its construction of dams and hydro-electric plants. The $7,500,000 credit will be used to purchase machinery, construction equipment, explosives, fuel and other supplies necessary to complete the work. The Brazilian government has agreed to spend $12,000,000 during the next 30 months for Brazilian labor and materials for the project.

Russia—Power plants of the Russian Ministry of Electric Power Stations have now regained their prewar capacity and are working to top this production by at least one-sixth by the end of 1947.

Transport . . . .

China—Plans have been completed for resurfacing main runways of eight chief airports in China, according to Lt. Col. Ango Tai, commissioner of civil aviation. The eight airports are at Kukiang, Hankow, Mukden, Tientsin, Kweilin, Shanghai, Amoy and Canton. All will be equipped with a hard-surfaced runway 6,000 ft. by 150 ft. Concrete will be used in most cases. Allotment of money to finance the work has already been made by the national government.

Puerto Rico—The Department of Interior recently approved construction of a total of about 12 miles of hard-surfaced main highways around San Juan, the island's capital city.

France—Lyon is now bringing to completion what is said to be the largest vehicular tunnel on the continent of Europe—a 47 ft. 6 in. dia. bore under one of the city's hills to provide four lanes for vehicular traffic and two sidewalks. Driven by top and side headings, the tunnel was enlarged to final section before the central core was taken out. Now the cut stone lining has been completed and work is under way on removal of the granite core, left after driving operations.

Russia—Reconstruction work on Moscow's "Belt Line" railway, linking the 11 trunk lines connecting the capital with the rest of the country, has started in line with the program mapped out in the current 5-year plan. Among plans for the reconstruction is electrification of all passenger-traffic track.

Chile—The Department of Public Works has voted a total of $9,354.838 for 1947 road construction, and $6,000,000 to be used for bridge construction in the same period.

Subway for Rome . . . .

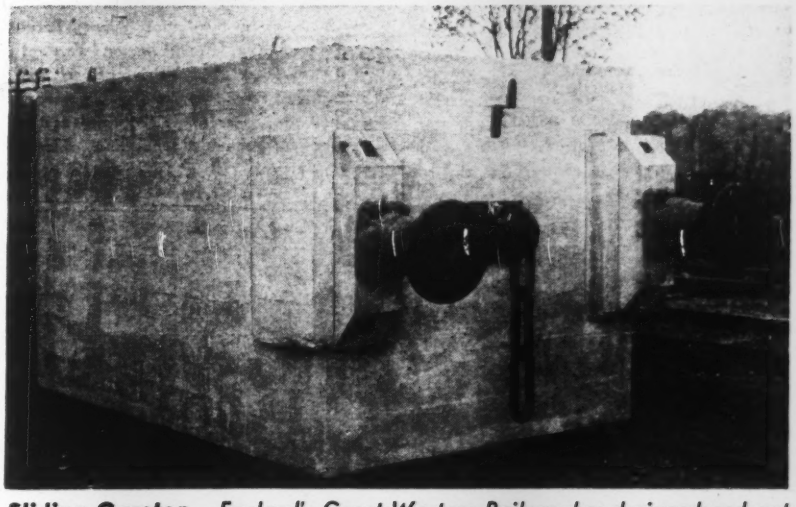
Italy—Workmen are now engaged in completing the roof for Rome's new "Metropolitana" a subway line which will carry trains underground through congested sections of the ancient city.

The subway follows for part of its length the route of the 2,260-year-old Appian Way, and the general route of the six-mile line will be from the Central Railway terminal to the Piazza Venezia, thence past the Colosseum and St. Paul's Gate, where it will connect with surface lines. Construction started in 1936 but was halted in 1942.

Skirting the Colosseum, the subway brings a touch of the very new into sharp contrast with engineering of a very ancient day. The Colosseum was completed in 80 A.D., and could seat 87,000 spectators within its marble walls. Its greatest length is 615 ft. and greatest width is 515 ft. Exterior walls are about 160 ft. high.

Press Assn. photo

***Old and New in Rome**—The ancient Colosseum is a backdrop for work on a new subway in the Eternal City. Workmen are constructing a roof on a portion of the Metropolitana, as the Roman subway is called. It is to run from the central railway terminal in Rome to Piazza Venezia.*



***Sliding Carstop**—England's Great Western Railway has designed and put into use on an experimental basis this sliding concrete "stop block" to prevent damage to cars being shunted onto storage tracks. Built of reinforced concrete, the block is a hollow box 10 ft. long, 6 ft. wide and 6 ft. high, filled with ballast to a total weight of about 20 tons. The block is kept in position on the rails by means of two parallel concave metal slides or runners which fit over each rail. Placed about one rail-length from the end of the siding, when successive impacts have moved the block back to near its limit, it is pulled forward to its original position.*

Engineers to advise on 'quake effects

At a recent meeting in San Francisco, engineers interested in the effect of earthquakes on structures came together at the invitation of the U. S. Coast & Geodetic Survey to discuss a cooperative program. The primary objective was to organize an advisory committee to represent the American Society of Civil Engineers, Structural Engineers Association of California, State of California, City of San Francisco, Stanford University, University of California, Board of Fire Underwriters of the Pacific, American Institute of Architects and other organizations.

Lieut.-Comdr. Elliott B. Roberts, chief, Division of Geomagnetism and Seismology, U. S. Coast & Geodetic Survey, stressed the desirability of having advisory service from such a committee in the matter of location and type of instruments and the kind of data desired therefrom in order that information gathered may be most effective in progress toward safer structural design.

H. M. Engle, Board of Fire Underwriters, pointed out that of the great amount of data compiled by the survey very little has been applied by structural engineers in actual design of buildings. This was ascribed to a "technical bottleneck", which it might be possible to remove if there could be better interpretation of available seismological data.

A notable aid in this interpretation, according to Frank Neumann of the Survey's Washington office, will be the torsion pendulum analyzer which has made it possible to interpret instrumental records so that for an earthquake of measured amplitude and acceleration it will be possible ultimately to give the equivalent static forces to which a building will be subjected. Mr. Neumann said that in considering the movement of a structure subjected to earthquake, two principal factors have to be taken into account, namely internal friction in the structure itself and the foundation coefficient.

Need new instruments

Commander Roberts pointed out that there has long been need for a less expensive instrument to supplement the present recording devices. An instrument is now in prospect, he said, which can be built for perhaps as little as $200 (as compared to $3,000 to $4,000 for the present accelerographs) which will make an ink record of strong motions, magnified about three times, on a drum which automatically will speed up, at the instant of the first heavy shock, from the minimum desirable speed of 1 in. per day to the desirable speed for seismic records of 1 cm. per second.

The meeting selected Franklin P. Ulrich, chief, Seismological Field Survey, USC&GS, San Francisco, as temporary secretary to organize a committee representative of the organizations mentioned in the foregoing. The committee is to be formed by invitation of the USC&GS with headquarters in San Francisco but will proceed with a view to combining cooperative endeavor along similar lines from the Pacific Northwest and southern California.

There is to be no domination of this committee by the USC&GS. Once the committee is functioning it is to be entirely independent, free to appraise critically the engineering seismological program of the Survey, if and when occasion arises, and perhaps to establish an institute of seismological engineering research if an extension of the Survey program appears desirable. Findings and recommendations of such a group are expected to carry authority by reason of its representative nature and inclusive coverage.

MORE NAVY ENGINEERS

A bill (H.R. 1359) authorizing about 660 additional engineers in the Corps of Civil Engineers of the Navy Department has passed the House and is now awaiting hearings by the Senate Armed Services Committee. The bill amends an act of Aug. 29, 1916, by increasing the strength of the Corps of Civil Engineers from 2 to 3 percent of the total active list of the commissioned line officers of the Navy.

Seattle professional group is growing fast

A large increase in the size of the Seattle, Wash., Professional Engineering Employees Association was reported at the association's recent annual meeting by Trygve Hoff, retiring chairman. Mr. Hoff said that when he took office early in 1946 the association had 250 members, and that it now has 950. He added, "We wrote our first contract in 1946, that with Parker & Hill. We now have two contracts in force, the contract with Boeing for the engineers making the second. We have six units functioning. They are the Boeing Engineers, Parker & Hill, Boeing Tooling, Continental Can Co., the Austin Co., and General Electric X-Ray.

The Seattle Professional Engineering Employees association, now an independent group, is one of the organizations originally set up under the plan promulgated by the American Society of Civil Engineers. It has taken an active part in the work of organizing the National Professional Association of Engineers, Architects and Scientists.

Registration law changed in State of Washington

A new registration law for the State of Washington which was sponsored by the Puget Sound Engineering Council and introduced by Representative W. D. Shannon, vice president of the American Society of Civil Engineers, was signed recently by Governor Wallgren. It is a general law covering the practice of professional engineering and land surveying, whereas the old law calls for licenses in civil, electrical, mechanical, structural and hydraulic engineering and in land surveying. It did not cover mining engineering.

The new law also provides that graduates of engineering schools may take the theoretical part of their license examination immediately following graduation, thus becoming engineers-in-training upon successful passing of that examination. Only an oral examination will be required after they have obtained the stipulated amount of practical experience.

Constructors organize trade association

A "trade" association to serve engineering construction companies engaged in the oil refining, chemical and steel plant fields, was organized in New York recently under the name of the National Constructors Association.

The group is expected to provide a research and information exchange in the field of management-labor relations.

Heading the new group as president is G. F. Bayes, director of construction for the M. W. Kellogg Co. of New York. R. F. Carter, general superintendent of the Lummus Co. of New York, is vice-president; Charles V. Bronson is secretary-treasurer. Temporary offices are located at the New York office of the Lummus Co.

Founding members of the association include: Stone & Webster Engineering Corp., Boston; Lummus Co., New York; Koppers Co., Inc., Pittsburgh; Arthur G. McKee & Co., Cleveland; E. J. Albrecht Co., Chicago; Rust Engineering Co., Pittsburgh; M. W. Kellogg Co., New York, and C. F. Braun & Co., New York.

New comprehensive plumbing code is being prepared for housing

Industry, labor and government cooperate on studies initiated by National Housing Agency for code to be ready this summer

One of the most comprehensive studies ever undertaken pertaining to plumbing codes for housing construction is now in progress as a joint venture of labor, industry and the federal government. As a result a new plumbing code is expected to be made available to municipalities, state groups and other organizations early in the summer.

Work on the new code was begun last year as part of the veterans housing program, and an extensive test program is now under way at the National Bureau of Standards. Once the latter is finished, the code can be completed, since eleven of the eighteen chapters are almost complete.

A great need for a national plumbing code exists because of the 1,600 codes of wide variations now in force in the U. S. Many requirements in existing codes are based upon old customs and practices, rather than upon detailed study as to how the various parts of a plumbing system function. For example, the minimum allowable distance between a vent in the drainage system and a trap varies from 2 ft. in many codes to as much as 8 ft. in the codes for one Florida city and two Michigan municipalities.

The research program soon to start at the Bureau of Standards is expected to cost about $50,000 and will exceed anything previously done in the bureau laboratories regarding plumbing systems. The present study will deal with the plumbing system for only one and two-story homes, but the results will be applicable to multiple-story structures. All three important parts of a system—water supply, drainage, and venting—will be studied.

The research work is planned to determine: (1) the carrying capacities of various parts of a plumbing system, (2) most satisfactory venting methods, (3) safeguards necessary to prevent self-syphoning of fixture traps, (4) safeguards necessary to prevent pollution of the water supply because of cross connections and back syphonage, (5) the size of vents necessary to prevent the closure of the roof terminals of the vent in cold weather, and (6) determination of the best materials and equipment for all parts of the plumbing system and what new materials may be used satisfactorily. Tables will also be prepared to aid in calculating the proper size of water pipes and drain pipes of a system.

Because older codes have been prepared without full knowledge as to what happens in the plumbing system, that is, how the water flows through various parts of the system and how air in the system affects operation, most of the plumbing systems assembled in the bureau laboratories will be made of transparent materials.

Members of the committee supervising the work are: Vincent T. Manas, chairman and representative of both the Office of the Housing Expediter and NHA; Herbert Schaller of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry, AFL; Henry Blank, National Association of Master Plumbers; George Thompson, National Bureau of Standards, and Malcolm C. Hope of the U. S. Public Health Service.

Seek tax exemption for Missouri public housing

The St. Louis, Mo., Housing Authority will ask the Missouri Supreme Court for a declaratory judgment interpreting public housing as "a charitable undertaking" under the terms of Missouri's new state constitution, and therefore eligible for tax exemption.

The decision to seek this short-cut that would in effect obtain tax subsidies and thus attract large investments in mass housing projects in the St. Louis area by large life insurance companies was reached at a recent meeting of the St. Louis Anti-Slum Commission.

The commission voted to support the St. Louis Housing Authority in the proceedings before the Missouri Supreme Court at Jefferson City.

The state legislature recently defeated a bill designed to pave the way for mass housing projects in St. Louis, Kansas City and St. Joseph.

More guaranteed market contracts for prefabs

Guaranteed market contracts have been recommended to the Reconstruction Finance Corporation by Housing Expediter Frank R. Creedon for Home Builders Corp. of Atlanta, Ga., and Metal Homes Co. of Los Angeles, Calif., both for the production of prefabs.

Home Builders Corp. proposes to build a 1-story, 2-bedroom wood-frame and plywood-panel house of conventional design, with a floor area of 672 sq. ft. The contract calls for the production of 750 houses this year to cost about $6,030.

The Metal Homes Co. product is a 1-story 2-bedroom steel-panel house of conventional design containing 855 sq. ft. The company estimates the price of the house will be about $6,660.

A guaranteed market contract also has been recommended for ATF, Inc., Elizabeth, N. J., for the production of a new type precast concrete wall panel for use in residential construction.

Each panel consists of two facing panels of light-weight concrete reinforced by a steel frame or "cage" in between. Light-weight aggregates make possible a weight of only 400 pounds a panel.

***Blast For Columbia Basin Canal**—The northern section of the river-size main canal for the Columbia Basin project at Coulee City, Wash., is being cut out of solid rock by blasting. Workmen for J. A. Terteling and Sons, Boise, Idaho, general contractors, prepare drill holes.*

HIGHLIGHTS OF MUNICIPAL DEVELOPMENTS

Summarizing current activities in city engineering and construction throughout the country.

City planning problems concern officials—New York governor vetos ban on garbage dumping—Philadelphia uses concrete pipe for sewers—Columbus, Jersey City consider municipal parking

A guidepost for city planners who look too far into the future was set up in Minneapolis, Minn., last week, when the city's chamber of commerce advised city officials that a comprehensive plan should be developed for a city of 600,000—and dreams of a population exceeding 1,000,000 should be forgotten.

The chamber's rezoning committee, completing a year's study for an amended city zoning ordinance sounded a warning to planners when it pointed out that plans made as far back as 1924 and restrictive of use of property even though the recommended projects have not been carried out, must be scaled downward because the predicted large expansion of population has not materialized. The group blamed depression, war and changing political and technological conditions affecting community growth for the lack of expected growth.

It pointed out that industrial and commercial development and population increase have been consistently below estimated rates. "It is obvious," the report said, "that Minneapolis—like many cities—over-zoned for commercial purposes in 1924."

The report was prepared by A. C. Godward, former city planning engineer, and Joseph W. Zalusky, retired senior engineering aid to the city planning commission.

Philadelphia expands service

To expand its services to citizens and incidentally to aid revenues by increasing efficiency of its departments, Philadelphia, Pa., should build a series of five "neighborhood city halls," according to the city's planning commission.

Under the plan, buildings would be erected in five geographical sections of the city, and would house tax, health, public works and all other branches of city government. The commission recommended that the structures be of one design, and include a large auditorium for the conduct of community affairs.

Besides looking to the convenience to citizens, the proposal would be a long step toward relieving present congestion at city hall, and would save the city a considerable amount in annual rental now paid to private property owners whose buildings house some of the city departments.

Other municipal planning projects disclosed during the week included approval by the Los Angeles, Calif., city council of a proposal to place some $55,000,000 in construction bond issues on the May 27 general election ballot. The bonds would be used to finance $18,000,000 for new jails and police administration buildings, $10,000,000 for interceptor sewers, and $12,078,000 for playgrounds and recreational facilities. Also to be placed on the ballot is an amendment to the city's charter to permit the building and safety commissioners and the city zoning administrator to make minor zone variance changes to expedite building.

***Unusual Exterior**—Using light steel and glass perimeter construction, made possible by placing perimeter columns on 9-ft. 8-in. centers rather than the usual 20 ft., and by transferring wind stresses to interior columns, engineers achieved this unusual appearance for the new Tishman building, at Park Ave. and 57th street, New York City. First post war office structure to be ready for occupancy in the city, the building is completely air conditioned, and will be occupied by May 1st. Kahn and Jacobs were architects, and the Tishman Realty and Construction Co. did the construction work.*

At Omaha, Neb., the Leo A. Daly Co., architects for a planned $3,500,000 municipal auditorium, approved a downtown site for the block-square structure.

In Richmond, Va., a private builder asked city councilmen to rezone a 196-acre area on suburban River Road to permit construction there of 100 houses and some 750 apartments. The area is now closely restricted to smaller homes.

Traffic problems

Relief of business-area traffic congestion continued to be an important phase of city planning. Two proposals for municipal parking areas—one an underground structure—were disclosed.

The underground garage was proposed for Jersey City, N. J., where it was suggested that the large potential area under Journal Square in the city's heart be utilized for parking, particularly by New Jersey residents who use their cars to reach ferries and underriver railroads to Manhattan Island.

At Columbus, Ohio, a more elaborate scheme was advanced in a proposal to roof over a large area of existing docks on the Scioto River at a cost of some $2,500,000, and thus provide parking space.

Dallas, Tex., pushing work on the planned East-West highway through the city, let contracts early in the month on the first section of the road—a 5.8 mi. length from Buckner Road to Belt Line Road; and engineers said that construction of a storm sewer shaft, to connect with existing lines to serve the highway, had been completed.

Construction of two highway bridges across the Susquehanna River at Harrisburg, Pa. at a cost of $23,750,000, including property damage, has been recommended by the State Highway Department.

The department recommended a "north" bridge across the river between Forster Street in Harrisburg and Walnut Street in Wormleysburg, and a "south" bridge connecting seventeenth and Paxton Streets in Harrisburg with Lowther Street in Lemoyne.

E. L. Schmidt, chief engineer of the highway department, estimated preparation of plans for either or both of the structures would take at least 18 months to two years.

In Illinois, the state legislature

passed bills authorizing Cook County (Chicago) to sell $70,000,000 in bonds to finance a superhighway through Chicago, and began consideration of amendments to the state's condemnation procedure to permit the state to take possession of condemned property before final court settlement of price.

Fort Wayne, Ind., decided to submit to voters at fall municipal elections a proposal for a $4,000,000 bond issue to finance the city's share of a proposed $27,000,000 superhighway through the city.

Concrete sewer pipe

Philadelphia, Pa., is now installing concrete sewer pipe for the first time in nearly 50 years, according to Thomas Buckley, public works director, who said that the pipe was being used because of continuing shortages of tile or terra cotta and scarcity of specialized bricklayers needed for laying up brick sewer conduits.

The first letting permitting use of concrete pipe was held recently.

While Philadelphia went ahead with its new sewer program, Worcester, Mass., planned to rehabilitate its sewage disposal plant during the coming summer to bring the plant back to its prewar capacity of some 40 mgd., through the construction of eight trickling filters with rotary distributors, in addition to eight similar filters already under construction.

Water supply plans

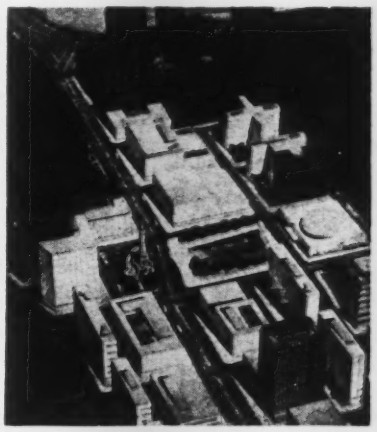
Potable water supplies to serve growing industrial and residential populations concerned many communities.

At Tulsa, Okla., work on the third reservoir for the city's Mohawk Plant was expected to start this week, as a part of a general expansion program that will include raising of the embankments on existing lakes by five feet to provide additional storage area.

Anderson, Ind., city councilmen were informed by officials of the Ranney System, of Columbus, Ohio, that the company was ready to start work on collectors for an underground water system to be furnished to the city.

Marion and Kendallville, Ind., voters will decide in November on the proposed issuance of $650,000 in bonds to finance modernization of waterworks.

The Pennsylvania Public Utility Commission authorized the Chester Municipal Authority to acquire properties of the Octoraro Water Co., and the Manor Real Estate and Trust Co. as part of a new $5,000,000 water supply system.



***On a Grand Scale**—Planners in the country's second largest city were working on a grand scale last week. In Chicago Arthur Rubloff, a real estate operator, and the consulting firm of Holabird and Root revealed plans for a $200,000,000 building development to transform a mile of land on both sides of North Michigan Avenue into a prime business, apartment and hotel center. Much of the land involved is already held by backers of the project and is committed to the plan which proposes medium-height (7-story) buildings, with taller office buildings, hotels, and apartments at the rear of the two-block wide development area.*

Beach erosion battle

Atlantic City, N. J., announced two important steps in its current fight against beach erosion. The city's Board of Commissioners announced that state approval had been obtained for construction of eight jetties, to cost about $500,000, and that bids would be asked on the work soon. The loss of beach area has been a source of continual worry to the resort city ever since the hurricane of September, 1944, and is now one of its most pressing municipal engineering problems.

Two-way radio aid

Organization of the Utility Radio Committee of New York, New Jersey and Eastern Pennsylvania was announced recently after a meeting at Albany, N. Y. The group has as its purpose the development and coordination of a frequency assignment pattern for the territory represented that will permit municipal departments other than police and fire organizations to take advantage of 2-way radio communications between headquarters and service trucks and crews.

Membership is open to gas, electric and water departments, and to petroleum industry representatives, through George H. Underhill of the Central Hudson Gas and Electric Co., Poughkeepsie, N. Y., who is acting as temporary chairman.

Veto N. Y. landfill ban

Governor Thomas E. Dewey of New York has vetoed a measure that would have prohibited, after July 1, 1949, the dumping of garbage, rubbish or refuse, except residue from incineration, on landfills within New York City. The bill was opposed by Mayor William O'Dwyer of New York City, as well as by the state Health Department.

Supporters of the bill were civic groups in Queens and Richmond boroughs of New York City where the city is now operating extensive landfills.

In a memorandum to the governor, Mayor O'Dwyer said that the city was compelled to dispose of refuse in landfills because the U. S. Supreme Court had permanently enjoined the city from dumping garbage at sea and because the city had not yet completed its incinerator construction program. The mayor added that disposal of garbage in landfills did not endanger public health. In this connection, he recalled the indorsement of landfill practice by health experts who studied the New York situation some years ago (*ENR* March 28, 1940, vol. p. 446). Observers were quick to note that this apparent championship of landfills by the mayor was in striking contrast to his viewpoint of some months ago, shortly after he had taken office. At that time he condemned the practice and urged immediate construction of incinerators.

PERSPECTIVE . . . .

Controversy Over Toll Roads

The idea that the country's present-day highway needs can best be answered by construction of an extensive mileage of toll roads is finding no favor with the Public Roads Administration and many non-government highway groups. Although toll-road schemes are receiving considerable support, the PRA and other organizations that made intensive financial studies of such proposals say that they are not the solution to the country's severe traffic problem. By construction of toll roads the public in final analysis would pay more and get less, the PRA believes.

Although there are numerous toll bridges in the U. S., the number of toll highways at present is limited. The best known are the Pennsylvania Turnpike through the mountainous region between Harrisburg and Pittsburgh, some of the parkways in Westchester County, New York, and the Merritt Parkway in Connecticut. The Overseas Highway leading from the Florida mainland to Key West is about the only other toll highway on main routes, but there are 16 privately owned toll roads, most of them leading to resort areas.

However, the proposal to spend large sums on construction of toll roads is widespread. The state of Maine already has under construction a 44-mile toll highway from the New Hampshire border to Portland (*ENR* Jan. 23, vol. p. 147), and Arkansas recently passed a law authorizing construction of a toll highway in Desha County. A West Virginia turnpike commission with powers including that to issue bonds for toll expressways has been created.

Several state legislatures have under consideration the construction of toll highways. In Oklahoma a bill has already been passed by the state senate to permit construction of such a highway between Tulsa and Oklahoma City. The California legislature has before it five bills relating to toll highway facilities, Connecticut is considering a toll parkway along the Housatonic River, and Georgia a toll scenic highway along the Atlantic Coast. The Maryland State Roads Commission is authorized to construct toll highways by a bill already passed by both houses, while Massachusetts is studying the creation of a Boston port authority to construct both toll bridges and elevated highways.

A toll expressway connecting Maine and Massachusetts is up for consideration in New Hampshire, which is also debating a toll-road authority of considerable scope. An Ohio bill would create a 5-man commission to issue bonds and construct toll highways.

Congress gets toll bills

The U. S. Congress also has before it a bill (H. R. 1063) calling for construction of six toll expressways extending across the country, and a second proposal (H. R. 155) to permit federal funds to be used widely for the construction of toll roads. A scheme similar to that outlined in the first bill has been turned down several times in the past, and the second apparently is not getting anywhere, as the House Public Works Committee has held no hearings on the bill as yet.

In contrast to all of this, the PRA, and a long list of non-government groups strongly criticize the idea that toll highways are the answer to the nation's present-day highway needs. The private groups include: the National Highway Users Conference, the Automotive Safety Foundation, American Trucking Associations, National Association of Motor Bus Operators, National Sand and Gravel Association, Automobile Manufacturers' Association, National Automobile Dealers Association and the National Rural Letter Carriers Assn.

Federal legislation permits the use of federal funds for construction of self-liquidating publicly owned toll bridges. PRA justifies this procedure on the grounds that rarely is the construction of a toll bridge followed by the building of a free crossing that would require the public to pay for duplicate bridges. Moreover, the PRA specifies that the toll structure must be freed of tolls once the bonds to finance its construction have been paid.

After an extensive study in 1939, the PRA issued a 132-page comprehensive report in which it came out strongly against the construction of toll roads. The PRA believes that the conclusions reached then are still good.

Major objection of the PRA to toll highways is that more than half of the present-day travel on America's main highways is short-distance traffic and that this traffic cannot be served by toll roads with access points at widely spaced intervals. If toll highways are built, the public still would need to maintain a system of parallel free highways and at the same time bear the cost of the toll roads, according to the PRA. Because of the special designs necessary to permit the collection of tolls, toll roads are more costly to construct than express highways, the PRA also contends. It is further pointed out that once a toll road is completed, collection of the tolls is a rather costly operation that must be paid by the highway user. PRA believes that toll roads are uneconomic.

When queried about the apparent success of the Pennsylvania Turnpike, opponents of the toll-road plan cite this expressway as a special case. They claim that if the federal government had not supplied $29 million or about 40 percent of the project's cost as an outright PWA grant, the highway would be operating deeply in the red today, instead of about breaking even. It is further revealed that in building this road, an old abandoned project on which much construction for a railroad had been completed was used, thereby placing the turnpike in a special position. When highways in Pennsylvania and Maryland parallel to the expressway are improved the favored position of the turnpike will diminish.

The utility of the Maine Turnpike is being criticized because the limited number of access points do not permit short haul traffic to use the road. This project is designed with only three interchanges in addition to the terminals in a length of about 44 miles, making the average distance between points of interchange 11 miles. Studies showed that additional interchanges could not be justified if less than $25,000 was collected annually at the interchange for a period of at least 23 years, according to PRA engineers.

New York prefers free road

Opponents of the toll road scheme also point to the 486-mile limited-access thruway being built across the state of New York at a great cost to connect the New York City area and the Great Lakes (*ENR* Jan. 23, vol. p. 129). Although the idea of tolls for this expressway was considered strongly, the plan was turned down as unfeasible.

The state of Illinois, in an analysis of possible toll roads, made a detailed study of three such projects in rural areas and seven in the urban areas of Chicago. Assumed direct toll charges were ½c. per mile for passenger vehicles and 3c. per mile for trucks. None of the facilities studied figured to be self-liquidating except one route and apparently that state has abandoned the idea of constructing toll roads as the best solution to its traffic needs.

States disclose road building plans

With the arrival of the spring construction season, state highway departments last week continued to announce huge repair and construction programs. Among developments were:

The New Mexico highway commission awarded contracts for seven federal-aid and two state road projects, totaling almost $1,500,000. The contract-letting was among the largest in the state's history.

Approval of a tenth project was withheld pending re-examination of the plans by state highway engineers as bids were much above estimates.

A $31,000,000 improvement program for Virginia's secondary road system was outlined recently as state highway department engineers gathered in an annual all-day session. L. E. Akers, assistant maintenance engineer, said that during the 18-month period which began Jan. 1 last $17,000,000 would be available for construction work, $4,600,000 for maintenance replacement, and $8,700,000 for other maintenance.

The North Carolina Legislature during its recent session allocated a total of $117,761,968 from the state highway fund for highway construction during the next biennium.

Pennsylvania Secretary of Highways Ray Smock announced that $2,700,000 had been allocated for highway building and repairs in Erie County for 1947.

New plan for Cascade route

An all-weather route across the Cascade Mountains in Washington state could be provided more economically by the protection of the existing Snoqualmie Pass highway with snow sheds for about 3,000 ft, than by the construction of a $21,000,000 tunnel, Homer Hadley, prominent Seattle consulting engineer, told a Seattle Chamber of Commerce committee recently. The proposal for the tunnel was defeated in the legislature recently (*ENR* April 3, vol, p. 89).

"A four-lane highway, protected by snow-sheds where slides are prevalent, would do just as much to eliminate unfavorable winter traffic conditions as would a two-lane tunnel," he asserted.

A resolution proposing a $150,000,000 bond issue for construction of state highways, and farm-to-market roads was introduced in the Oklahoma house of representatives. The resolution, which would call for a popular vote, likewise would pledge the present 4-cent gasoline tax to pay the bonds.

Contracts awarded last year on projects scheduled for completion this year, and new contracts let or scheduled to be let during 1947 comprise a Maryland State highway and bridge-building program involving over $26,000,000.

This work, it was explained by Wilson T. Ballard, chief engineer of the State Roads Commission, is distinct from road and bridge projects to be financed out of the $100,000,000 bond issue authorized by the recently-adjourned legislature.

Road beautification

Planting of flowering trees was started last month on a 5-mile model highway beautification project on Indiana State Highway 24. Fort Wayne and other nearby city garden clubs are cooperating with the highway department in supplying 3-foot dogwood trees and 5-foot redbud trees for planting along the dual highway. These will be supplemented in the fall with shad-blow trees. The department plans eventually to plant the entire length of the highway, whose 4-lane section extends from Fort Wayne to Huntington.

New Jersey is inviting other states to join in extending the State's Blue Star Drive from coast to coast as a memorial to veterans of World War II. Governor Driscoll has signed a legislative resolution extending the memorial project to the state's borders. It calls for planting flowering dogwood along both sides of U. S. Route 25 in the State. Beautification of the initial section in Union and Somerset Counties has started.

Oklahoma and Florida consider toll road plans

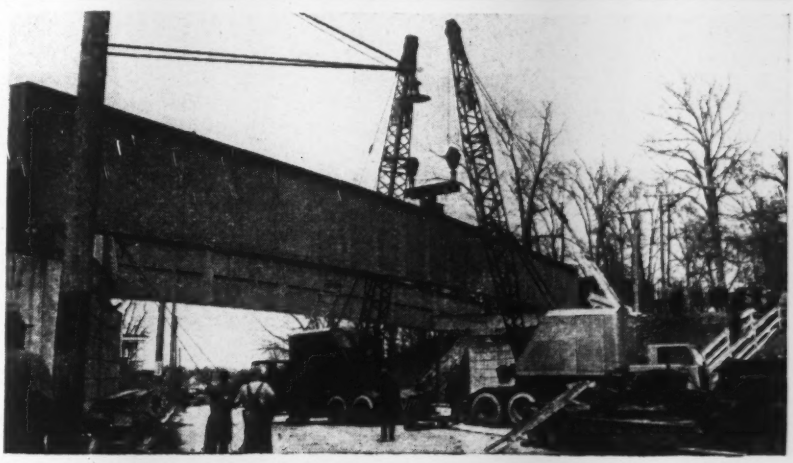
A bill authorizing construction of the Oklahoma City-Tulsa express toll highway passed the state senate recently by a bare majority and faces a hard fight in the house. It would create an authority of five members to be named by the governor with authority to issue revenue bonds, build the highway, operate and maintain it until the bonds are retired.

Opposition to the plan comes from communities along the route of U. S. 66 which believe that the highway would create barriers through the area traversed as there would be only 40 overpasses although the route would cross about 160 county roads.

The Florida legislature has authorized the State Improvement Commission to borrow money and build toll roads. The road department has agreed to supervise the construction for the improvement board, maintain the structures when they are finished, and to pay all the tolls, so motorists will not have to pay.

Actually, the so-called toll will be an annual payment by the road department from the gas tax surplus on the books to the credit of the counties. When the road is paid for, the improvement commission will step out and turn it over to the road department as a state road.

However, there is a legal question as to whether such payments by the road department actually would be tolls of the sort planned when the legislature authorized the improvement commission to borrow money and build toll roads.



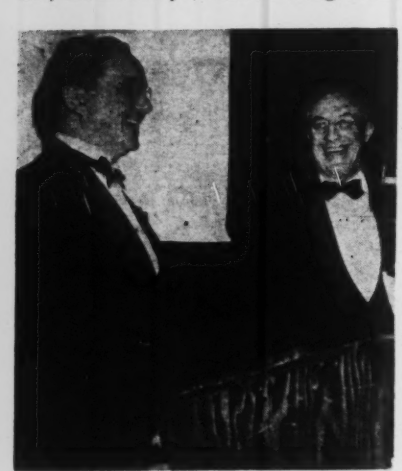
***Delayed Bridge**—Construction crews place 33-ton girders for highway bridge at Jenkintown, Pa., on foundations put down in 1941. Located at the intersection of Old York Road and Edge Hill Road, completion of the structure was delayed by wartime steel shortages. Two truck cranes, equipped with 40-ft. booms, each standing about 13 ft. off center, lifted the 113-ft. long, 8-ft. high girders into place for the structure.*

MEN AND JOBS

Robert C. Brown, engineer on the Bureau of Reclamation San Luis project in Colorado, has left for Shanghai, China, where, on loan from the Bureau of Reclamation, he will join the program planning staff of UNRRA engaged on the Yellow River project. His work will be in the downstream area from which the river has been diverted to relieve 2,000,000 acres from periodic floods. Mr. Brown will act as a technical advisor attached to the UNRRA staff.

Henry Cook, for 15 years engineer of Tarrant County, Tex., has resigned to join Luther Bros. Construction Co., Ft. Worth. **Bob Gibbins** will succeed Mr. Cook.

William R. McComb has been nominated as administrator of the Wage and Hour and Public Contracts Divisions, U. S. Department of Labor. Between 1934 and 1936, he was deputy administrator in charge of construction, heavy machinery and raw materials codes in the NRA program, and subsequently was promoted to special assistant to the administrator. Before entering government service, Mr. McComb, who attended the University of Missouri and is a graduate of Harvard Engineering School, was in the building materials and construction business in New York. Previously, he was vice-president and director of the Craftex Co., a subsidiary of the Building Products Co. of Boston and New York, and had been vice-president of the Flexwood Co. of Chicago.



***Paul Weir (left) assistant chief of the Atlanta, Ga., water department, prepares to** take the gavel as new president of the Georgia Engineering Society from Earle Mauldin, southern editor for McGraw-Hill publications, retiring chief executive of the state organization.*

Frank L. Raschig, Ohio director of public works for the last seven years, has received Ohio Supreme Court approval to continue in that post until July 22, when his one-year appointment received from former Gov. Frank L. Lausche will expire. Raschig's right to the post was challenged by **John L. McCormick,** Ravenna, appointed by Governor Lausche on Feb. 11, 1947. The Ohio Supreme Court held that the governor had no authority to make an appointment for either less or more than one year.

Edward F. Tanghe, principal engineer for research and design in the water division of the city engineer's office at Milwaukee, Wis., has been appointed assistant superintendent of water works. He has been with the city since 1927. From 1934 to 1937 he was a pitometer engineer for the city engineer engaged in the study of water pressure and surveying the distribution system. He is a graduate of the University of Wisconsin.

Rex Reed has been appointed regional planning engineer for the U. S. Bureau of Reclamation with headquarters at Amarillo, Tex. Mr. Reed, who joined the bureau in 1933, was in the Navy for three years. Since his reversion to inactive status in 1945 he has been engaged in the Washington, D. C. offices of the bureau.

John J. Bloomfield, assistant chief of the division of industrial hygiene, United States Public Health Service, has gone to Bolivia to work for two months with the field party there on its labor program.

Lawrence V. Sheridan of Indianapolis, Ind., has been engaged by Muncie, Ind., to revise its zoning ordinances.

Brig. Gen. John F. Conklin has been appointed chief of the personnel division, Office of the Chief of Engineers. He is a graduate of the U. S. Military Academy, 1915, and served in both world wars. He was an instructor at West Point for four years. With the Western Task force in 1942 he made a valuable contribution to the successful landing in French Morocco. In 1944 he became engineer of the Third Army. He has been at Fort Lewis, Washington, as the commanding officer of the replacement training center since November, 1946.

L. E. Clayton, of Tama, Iowa, has been named county engineer for Jefferson County, Iowa, with headquarters at Fairfield. He succeeds **Fred Pfaff,** who resigned to accept a similar position for Keokuk County with headquarters at Sigourney. Mr. Clayton is a veteran of both world wars, having served in the Corps of Engineers of the Army and held the rank of lieutenant colonel.

Amiel Reichstein, city engineer at Ottumwa, Iowa, for the last two years, has resigned to accept a position in the engineering department of the Burlington Railroad Co.

Carl Young, of Chicago, has been appointed county engineer for Adair County with headquarters at Greenfield, Iowa, to succeed the late F. A. Malcolm.

Thomas T. Teall, who served as county engineer for Worth County, Iowa, for five years prior to 1939, has been re-hired for that position. Of late, he has been with the state highway commission at Decorah, Iowa. His headquarters are to be at Northwood. He succeeds **Charles Capper,** who resigned to become county engineer for Wayne County at Corydon.

William O. Owens has been appointed resident engineer at Fort Stevens, Ore., to succeed **Olney J. Hawkins,** who be-

Robert H. Hartman (left) superintendent of the sewage treatment plant for Frederick, Md., poses for a picture during a conference with W. Raymond Walter, who has been engineer for the city since 1940. Officials are now considering a $140,000 improvement plan for the sewer system.

comes head of the maintenance branch of the Portland, Ore., District U. S. Engineers. Owens formerly was assistant area engineer at Forts Canby and Columbia.

Robert Cook, Lincoln, Ill., civil engineer, recently left the Illinois Division of Highways to work for Warren and Van Praag, Inc., of Decatur, Ill.

Charles M. Reading has been appointed assistant manager of the engineering department of General Petroleum Corp., and **Turner C. Smith,** chief structural engineer. Reading began service with the engineering department in 1926 after service in World War I and subsequent graduation from West Point. He also served in World War II, and was released with the rank of colonel after active service overseas. He was promoted to his new position from assistant engineer of construction. Smith entered the employ of General Petroleum in 1926 following his graduation from the University of Arizona.

Frederick A Muhlenberg, elected to the House of Representatives from the Thirteenth Pennsylvania District last November, formerly was a lieutenant colonel with the Army Engineers. He was with the Corps for five years, for the last eighteen months as district engineer at Cincinnati, Ohio.

Frank C. Hanrahan, manager of Arlington County, Va., for the last 11 years, will resign June 1. During his term as manager the county, across the Potomac River from Washington, D. C., has grown from a population of 35,000 to approximately 140,000. Previous to his present position, Mr. Hanrahan for 6 years was city manager of Portsmouth, Va. He also worked as finance examiner for the Public Works Administration, and as chief of the projects division of PWA. He is also author of several books on taxation, and, is a past president of the International City Managers Association.

Regis C. McNamara is resigning from the city engineer's office in Binghamton, N. Y., to open an engineering office in that city. He was appointed a postwar projects surveyor a year ago after discharge from the Navy. He is a former deputy city engineer.

E. A. Grubb, New Hope, Pa., engineer, is helping direct a city-county planning survey at Winston-Salem, N. C.

Edward Braddock will replace **Alfred E. Berthe** as park engineer for Minneapolis, Minn., when the latter retires in July. Braddock is a University of Minnesota civil engineer graduate, 1924. He has been project planner for the local planning commission for three years.

S. E. Wiseman, C. V. Sweeney, O. F. Harper and **W. D. Anderson** have formed the Exploration Drilling Co. Inc., at Huntington, W. Va.

Herman A. MacDonald, former Massachusetts Commissioner of Public Works and former mayor of Beverly, has been appointed a member of the state Appellate Tax Board.

Robert Patton, former Carolinas representative of the Dixie Culvert and Metal Co., who served with the Corps of Engineers during the war as area engineer at North Charleston, S. C., has been named assistant executive secretary of the Carolinas Branch, Associated General Contractors of America, with headquarters at Charlotte, N. C.

C. P. Christensen (right) director of power of the Boulder Canyon Project, explains latest developments to Roy S. Campbell (center) who was superintendent of plant design for the firm that installed the project's penstocks, and Tom O'Neil, who was in the original surveying party in 1921.

Meeting at Washington at the invitation of the U. S. Department of Labor are a group of industrial ventilation experts, who reviewed a proposed exhaust ventilation code drafted by the International Labor Organization. Left to right are: R. L. Higgins, chief safety engineer, Department of Labor, New Jersey; Curil Ainsworth, assistant secretary, and D. F. Hayes, safety engineer of the American Standards Association; Allan Brandt, industrial hygiene engineer, Bethlehem Steel Co.; S. C. Rothmann, hygiene engineer; W. G. Marks, chief of safety and health branch, Department of Labor; W. N. Witheridge, ventilation consultant, General Motors Corp.; William Harris, New York State Department of Labor; John Kane, chief engineer, dust control division, American Air Filter Co.; W. O. Vedder, Pangborn Corp.; Swen Kjaer, and I. L. O. committee member, and B. F. Postman, industrial hygiene engineer, Employers Mutual Liability Insurance Co.

Warren K. Myers (left), chief maintenance engineer for the Pennsylvania Department of Highways, prepares to take the rostrum at a recent North Atlantic States highway convention. Spencer Miller Jr., New Jersey state highway commissioner, performs introduction.

ENGINEERING SCHOOL NEWS

College-Federal Agency Council formed—Two-year hydraulics research at Minnesota—Graduate study and research at Case

The recent formation of the College Federal Agency Council may lead to greater competition of the federal government with private industry for high-caliber college graduates with degrees in engineering, physics, and other technical lines. Purpose of the council, which will cover the Second Civil Service Region of New York and New Jersey, will be to establish closer relationship and greater cooperation between federal agencies and colleges and universities.

The newly-formed council will have as one of its projects the task of acquainting college students and faculties with the immediate and long-range need for college graduates in the professional, scientific, and administrative fields of the federal service. It may also explore the problem of providing appropriate curricula for students who wish to enter the federal service, in order that they may be properly qualified for their work.

A suggestion has been made that students be given the opportunity during summer vacations to get federal experience, and that the best of these summer trainees be chosen for permanent positions; and also that students be permitted to complete college studies while holding federal positions. A register of eligible pre-graduation candidates may be compiled so that federal positions might be offered to students before they actually leave school and are looking for future employment.

A 2-year research program is under way at the University of Minnesota's St. Anthony Falls hydraulics laboratory for the purpose of developing more efficient and economical types of highway culverts for road underdrainage. To finance the work, a grant of $18,000 has been made jointly by the U. S. Public Roads Administration and the Minnesota State Highway department under the federal highway aid plan. Research will be under the direction of Lorenz G. Straub, head of the university's civil engineering department and director of the laboratory. The principal effort will be to develop a culvert entrance which will operate efficiently over a wide range of flows, since the ordinary culvert tends to cause water to back up during the early stages of rainfall runoff. It is estimated that Minnesota will spend $1,000,000 on such culverts.

In his recent annual report to the alumni of the Case School of Applied Science, Cleveland, Ohio, President William E. Wickenden called special attention to the importance of graduate study and research. He says "Whatever other goals a technological institution of the first rank may set for itself, scope must be reserved for the growth and extension of graduate work. The foundation training now being offered to undergraduates probably is the best general training now available for careers in industry and in much of business as well. It falls seriously short, however, as preparation for professional work and responsibility. It needs to be carried further to prepare men for individual career goals. Much of this further training must follow or accompany actual experience if it is to rise above the level of book-lore."

John A. Ross, Jr., president of Clarkson College of Technology, Potsdam, N. Y., since June, 1940, will retire from active work June 1. His resignation will take effect Oct. 1, 1948, after his 70th birthday. He formerly was an instructor of warship design at Massachusetts Institute of Technology and taught engineering at Case School of Applied Science, at Cornell University and at Lafayette University.

Among the 16 co-ed students in the College of Applied Science at Syracuse University is Miss Margaret Hastings of Owego, N. Y., who was much in the news two years ago when she spent 47 days in New Guinea's "Shangri La" after the plane in which she was a passenger crashed in the jungle. Miss Hastings is a freshman and plans to enroll in chemical engineering in her sophomore year.

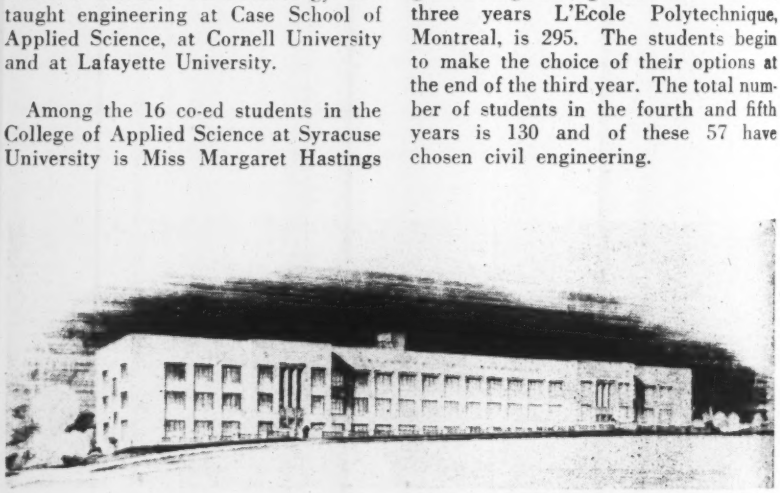
At the University of Colorado there are 45 women students in the college of engineering.

The following data are supplementary to the survey of enrollment in engineering schools published in *Engineering News-Record* March 13, volume page 418:

The total enrollment in all engineering courses at Union College, Schenectady, N. Y., for the second semester is 349, and the total in civil engineering courses is 63, or 18 per cent.

J. J. O'Neill, dean of the faculty of engineering at McGill University, Montreal, Que., says, "The engineering students at McGill do not signify the branch of engineering they wish to take until the end of their second year. In the case of civils, electricals and mechanicals the second year course is the same. I cannot segregate the civils of the first two years, which are the big years at present. The total number of students in the four years of engineering at present is 1550. The number in civil engineering for the third year is 48 and for the fourth year, 38, a total of 86."

The total number of students in the general engineering courses for the first three years L'Ecole Polytechnique, Montreal, is 295. The students begin to make the choice of their options at the end of the third year. The total number of students in the fourth and fifth years is 130 and of these 57 have chosen civil engineering.



***Institute of Technology**—Construction of an Institute of Technology building has started on the campus of Washington State College, Pullman, under a contract awarded recently to Henry George & Sons of Spokane. Costing about $1,700,000, the 3-story structure will be 350 ft. long by 72 ft. and will house laboratories for industrial and physical research. It will be completely air-conditioned and none of the windows can be opened. Schedule calls for its completion by the opening of the 1948 fall term.*

Port Authority leases N. Y. City's airports

The Port of New York Authority will take over the city's three major airports on June 1 under a 50-year lease contract signed April 17 by Mayor O'Dwyer and Howard S. Cullman, chairman of the bi-state agency. The signing of the contract followed approval of the plan by the Board of Estimate (*ENR* April 3, vol. p. 490).

The contract calls for the development, expansion, rehabilitation and operation by the Port Authority of La Guardia Field and Idlewild Airport in Queens and Floyd Bennett Field in Brooklyn.

The agreement will call for an ultimate expenditure of about $200,000,000 over the 50-year period. Financing will be done by the agency's own bonds, expected to be floated at an interest rate of not over 2½ percent.

The city already has invested about $90,000,000 in the Idlewild and La Guardia airports, and its annual budgets will continue to carry the debt service charges on that investment.

The Port Authority under the contract will guarantee a minimum annual rental of $350,000 until 1957 and $450,000 thereafter.

Minnesota rejects bill specifying concrete mixes

The Northwestern Section of the ASCE has been instrumental in killing a bill in the Minnesota legislature that would have required the state highway department to specify the use of 15% of natural cement in all highway concrete.

No criticism was made of the use of natural cement but the Northwestern Section maintained in a resolution presented to the Senate that mix design should be left to the judgment of engineers and not made mandatory.

Dorena Construction Co. to build Dorena Dam

The four California firms which won a $7,737,570 contract for construction of Dorena Dam for U. S. Engineers in Oregon have organized the Dorena Construction Co. to carry out the project, with George H. Atkinson as administrative head. The firm is composed of the Guy F. Atkinson Co., San Francisco; W. E. Kier, Los Angeles; Bressie & Bevanda Construction Co., Los Angeles, and A. Teichert & Sons, Sacramento.

Campbell River power to be greatly increased

Authorization has been granted to the British Columbia Power Commission by the provincial government for production of two additional 25,000 h. p. units to be installed at the Campbell River power development at an approximate cost of $2,700,000.

These two units will supplement two now in the process of construction and installation. When the additional units have been installed, Campbell River development will have reached the 100,000 h. p. stage.

The first 25,000 h. p. unit will be fully loaded when it goes into operation during the next three or four months, while the second 25,000 h. p. unit, which is now on order, is not expected to provide more than sufficient capacity for normal increases to present consumers.

Lack of steel delays Mississippi bridge

Despite the virtual completion of seven piers, it will be at least 18 months or two years before the superstructure for the span across the Mississippi River at Memphis, Tenn., is completed, state highway officials reported.

Neill Bohlinger, secretary for the highway commission, said it would be at least 18 months before the steel could be obtained.

Seek permit to build Mt. Hood aerial tramway

Applications for permission to construct an aerial tramway on the slopes of Mt. Hood in Oregon have been filed with the government Forest Service by private interests.

The length of the proposed tramway will be about three miles with a difference in elevation between terminals of about 2,000 ft. A "sky hook" principle will be used as developed by the Pointer-Wilamette Co. in logging operations. In this system each car is a complete power plant in itself, getting traction from two stationary cables. The car, designed to accommodate 30 persons, is suspended from a carriage riding on two other cables and can be lowered and raised by the operator, at any place along the tramway. The maximum cost for the project is estimated at $350,000.

A previous proposal for a cableway on Mt. Hood (rejected) was described in *ENR* for March 17, 1927, vol. p. 447.

Begin condemnation suit for Whitney Dam site

The first land condemnation suit covering ground for the dam site proper of the $26,000,000 Whitney Dam to be built on the Brazos River has been filed at Waco, Tex., and on April 4 Judge Ben H. Rice, Jr., signed an order giving the government possession of 1,910 acres of land for this purpose.

Actual construction work on the dam is scheduled to begin at once. Construction crews are now busy rerouting highway 22 which will run directly over the completed dam.

Integrate all military engineering in Canada

Reorganization of the Canadian Army in line with its peacetime duties has resulted in the combination of two main branches of the Quartermaster General and the Master General of the Ordnance to form a single section which will bring under one head supply, transport, works and construction, development and all repair work.

As a part of this reorganization, there will be a complete integration of all military engineer services—involving the Royal Canadian Engineers, the Royal Canadian Army Service Corps, the Royal Canadian Ordnance Corps, and the Royal Canadian Electrical and Mechanical Engineers, with the design and development directorates in army headquarters. The resulting unit would be one large branch of army headquarters. A similar reorganization was effected for the Royal Canadian Navy in February, 1946.

Idaho considers code for building safety

Hearings on a proposed Idaho code of minimum safety standards in the building and construction industry will be held in three Idaho cities between May 6 and 14, with sessions scheduled at Idaho Falls, Moscow and Boise.

Proposed by the Idaho chapter of the National Safety Council, the code deals with safety rules for employees, handling and storing materials, excavation work, scaffolds, ladders, temporary floors and stairs, railings and toe boards, demolition, blasting, piling, derricks, material hoists, compressed-air work, housekeeping, temporary wiring and lighting, temporary sanitation, the use of salamanders, health and sanitation.

OBITUARY

Clifford G. Dunnells, 72, professor emeritus of civil engineering at Carnegie Institute of Technology since he resigned after 35 years' service, died in Pittsburgh, Pa., April 15. A graduate of Lehigh University, he designed some of the largest buildings in the Pittsburgh area. He started as a draftsman and estimator with the Pittsburgh Bridge Co. and in 1900 joined the American Bridge Co. as draftsman and contracting and designing engineer. He went to the faculty of Carnegie in 1910. There he organized a department of building construction, said to have been the first such department to have a definite, 4-year curriculum. Professor Dunnells also practiced structural engineering during the latter part of his career. In 1926 he formed a partnership with E. N. Hunting.

William C. Radloff, 56, senior member of the contracting firm of William C. Radloff and Son, North Tonawanda, N. Y., died April 8.

James W. Condon, 44, Brockton, Mass., assistant superintendent of streets, died April 3. He had been associated with the Brockton highway department since 1920, and had been largely responsible for all street construction projects in the last 20 years.

R. Moody Burch, 60, Tulsa, Okla., construction engineer, died March 6 at Pawnee, Okla.

William Sherwood Tomlinson, 65, president of the Tomlinson Construction Co. Ltd., Toronto, Ont., died April 11 in Winnipeg, Man. He started with the J. G. White Co. of New York in 1903, and went to Canada three years later for that company. He later worked with the Grand Trunk Pacific Railway and in 1912 organized his own company. His firm did a great deal of work on Canadian airports during the war.

John Gordon Scott, 64, civil engineer, died at Greenville, S. C., April 8.

Alva Watkins Maynard, 81, Virginia contractor who did much work in connection with the construction of Richmond's water, sewer and gas mains and bridges, died April 8. He was one of the leading contractors in charge of the construction of the $1,500,000 Broad Street Station used by three railroads. Mr. Maynard was head of the A. W. Maynard Co., contractors.

Richard E. Overman, 65, assistant to the U. S. district engineer at Little Rock, Ark., and former mayor of that city, died there April 12.

Alfred B. Kistler, 62, for the last 30 years an engineer for the American Stores Co., Philadelphia, Pa., died April 8. He was a graduate of University of Pennsylvania, 1907.

Phillip F. Shelly, 50, structural engineer, died in Philadelphia, Pa., recently. For the last seven years he was associated with the General Chemical Co.

Miles S. Proctor, 53, civil engineer and project manager for the Federal Public Housing Authority, died at Little Rock, Ark., April 11.

Calvin S. Goddard, 58, a structural engineer, of Needham Heights, Mass., died April 14. He was associated with the Thomas Worcester Co., and previously, with the Portland Cement Co.

Orville L. Eltinge, 62, engineer of sewer design of the Sanitary District of Chicago since 1924, died in Chicago April 15. He was a graduate of Rensselaer Polytechnic Institute, 1906, and was an instructor in mathematics and surveying there for several years. His first engineering work was on the the N. Y. State Barge Canal. In the first world war he was with the U. S. Army Engineers.

Lee B. Martin, 54, general superintendent of the Illinois Terminal Railroad, Springfield, Ill., since 1919, died April 6. He was a civil engineering graduate of Purdue University.

MAJOR MEETINGS

American Geophysical Union, 28th annual meeting, Washington, D. C., April 28-30.

National Rivers and Harbors Congress, 37th convention, U. S. Chamber of Commerce Bldg., Washington, D. C., May 2-3.

United States-Mexico Border Public Health Association, annual meeting, San Diego, Calif., May 6-8.

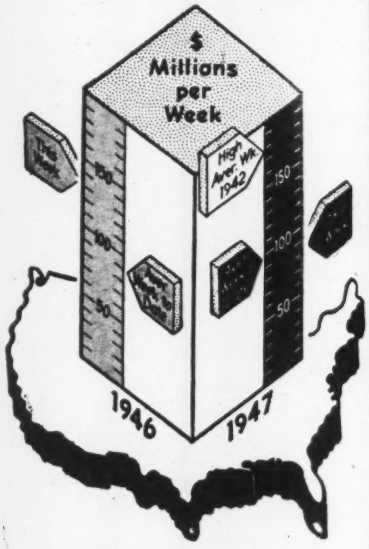
Society for Experimental Stress Analysis, annual meeting, Stevens Hotel, Chicago, Ill., May 15-17.

Associated General Contractors, spring meeting, governing and advisory boards, Olympic Hotel, Seattle, Wash., May 19-21.

American Shore and Beach Preservation Association, 21st annual meeting, The Berkeley-Carteret, Asbury Park, N. J., May 27-28.

American Society of Engineering Education, annual meeting, University of Minnesota, Minneapolis, Minn., June 17-21.

CONSTRUCTION ACTIVITY



As Reported this week to . . .
Engineering News-Record

CONTRACT VOLUME

Continental U. S. Only
(Thousands of Dollars)

	Week of Apr. 24 1947	Cumulative 1947 (17 wks.)	Cumulative 1946 (17 wks.)
Federal	$10,647	$153,475	$173,280
State & Mun.	35,372	480,674	341,243
Total Public	$46,019	$634,149	$514,523
Total Private	42,401	1,008,198	1,001,950
U. S. Total..	**$88,420**	**$1,642,347**	**$1,516,473**

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Dollar Volume (Thousands)

Type of Work	This Week	Cumulative 1947 (17 wks.)	Cumulative 1946 (17 wks.)
Waterworks ...	$1,655	$43,496	$33,366
Sewerage	821	29,506	19,263
Bridges	5,606	51,169	35,460
Highways	15,980	202,200	183,538
Earthwork, Waterways	8,819	83,409	97,528
Buildings, Public	7,633	159,557	98,588
Industrial ...	13,956	264,179	336,777
Commercial ..	20,980	613,156	595,440
Unclassified ...	12,970	195,675	116,513

NOTE: Minimum size projects included are: Waterworks and waterway projects, $22,500; other public works, $40,000; industrial buildings, $55,000; other buildings, $205,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1947 (17 wks.)	Cumulative 1946 (17 wks.)
NON-FEDERAL	$538,144	$281,639
Corporate Securities.	204,438	108,000
State and Municipal.	333,706	173,639
FEDERAL	.....	158,320
**Total Capital ..... **	**$538,144**	**$439,959**

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost.	Apr.'47	396.09	190.40
Building Cost....	Apr.'47	300.81	162.61
Volume	Mar.'47	220	96

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